Enuresis—A Psychosomatic Entity?

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ENURESIS is an intriguing condition for the child psychiatrist, since it epitomizes the problems of what is popularly called "psychosomatic medicine". Following customary pediatric usage, enuresis will here be defined as "the repeated involuntary nocturnal incontinence of urine occurring after the age of 3 years."

There is a widespread belief that enuresis is a psychogenic condition, but few appear to have pondered the scientific merit of the studies upon which this assumption is based. It is the purpose of this review to examine some of this evidence and to demonstrate the complexity of the relationship between psychological functioning and the somatic symptom of enuresis. In general, the remarks, except where otherwise specified, apply to the problem of the enuretic child, since this is the area of the author's interest and competence. Most of the criticisms, nevertheless, will be seen to apply with equal validity to studies on the enuretic adult.

HISTORICAL BACKGROUND

An editorial in *The Journal of Pediatrics*[21] appears to express some perplexity at how one is to reconcile Bakwin's[2] unorthodox thesis that "enuresis is an inborn developmental disorder characterized by a delay in gaining control of urinary function" with what the editor calls "the widely-held psychiatric view that enuresis is usually an emotional disturbance, often secondary to a disturbed child-parent relationship"?

The editor might have added that this latter point of view is not peculiar to child psychiatrists, being common among pediatricians and the public. Indeed, it seems quite unfair to place the responsibility for its origin upon child psychiatry, since it long antecedes the birth of child psychiatry. For example, Glicklich[18] in her historical review reports that Trousseau in 1870 classified enuresis as one of the neuroses, "leaving the impression that it was a lesser form of mental disturbance". Friedell[16] in 1927 could talk about the widely held point of view that enuresis was of emotional origin.

The reason for such an etiological attitude is not too difficult to imagine. Enuresis has stubbornly resisted all attempts to assign it a structural pathology and, furthermore, it is a condition notoriously resistant to therapeutic intervention. Faced thus with a disease the cause of which was undemonstrable (and has remained so by even the modern barrage of special investigations) and which was unresponsive to his therapeutic armamentarium, the physician in his frustration has sought refuge in the concept of enuresis as an emotional disorder. This allowed at least some kind of labelling and excused him from further responsibility in the case.

It might be argued more convincingly, therefore, that child psychiatry and psychoanalytic theory merely provided a satisfactory rationale for a long pre-existent irrational belief.

THE DIAGNOSIS OF PSYCHOPATHOLOGY

At this point attention should be given to the process of psychiatric diagnosis, since this is crucial to the purposes of our discussion.

When they moved from the somatic to the psychic sphere, physicians coined the word "psychopathology". It designates abnormal psychological functioning, psychiatric illness, maladjustment, or in short, a clear deviation from normal, just as the term "pathology" does in the area of somatic functioning. Unfortunately, unlike pathology, psychopathology seldom, except perhaps in psychosis, produces symptoms or signs which are qualitatively abnormal or pathognomonic. Most of these symptoms and signs can be found at some time or other, to a lesser or greater extent, in normal individuals. As Glidewell, Mensh and Gildea[19] have shown, psychopathology in children is not so much related to the type of symptom as it is to the number, duration and severity of such symptoms, the most valid relationship being with the total number of symptoms exhibited. The implication of this is, of course, that psychopathology appears as a wide-spread disturbance of functioning in several different areas.

Unhappily, there does appear to be a widely prevalent belief, among professionals and public alike, that a single symptom can be equated with the presence of psychopathology. Kanner[22]

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has challenged this point of view, mentioning specifically enuresis, a common example of such a monosymptomatic diagnosis of emotional disturbance.

There are several techniques for the diagnosis of psychopathology, none of which is adequately reliable or valid though some are probably more so than others. A study on psychopathology should be evaluated by its ability to provide, if at all possible, independent corroborative diagnostic methods, since because of the inherent errors in each method, reliance on one method only is less likely to produce reliable findings. It is also axiomatic that the value of any study is dependent upon its ability to provide control data about children who are basically similar to the experimental subjects, differing only in that they are not enuretic. This is necessary again, not only because of the low reliability of diagnostic methods (particularly interobserver reliability) but also because of the absence of norms for the general population. Methods for the diagnosis of psychopathology in children may be summarized thus:

(a) *Professional interview.* Here child and parent are examined in an unstructured interview by psychiatrist or other professional. This is assumed to be the standard against which other techniques are to be validated. There is, however, no proof of the correctness of this assumption. Dr. Hardin Branch[10] in his presidential address to the American Psychiatric Association in 1962 stated, "If a patient reaches a psychiatrist's office or clinic he stands a very good chance of being accepted for therapy. It is seldom that the psychiatrist tells a patient that his problem is not a psychiatric one." Hence, a certain amount of circumspection must be exercised about the validity of psychiatric diagnosis. This is particularly so in the case of psychodynamic diagnoses, since every condition normal or abnormal has its psychodynamics, and this frame of reference is much more useful for "understanding" than explaining fundamental questions of etiology.[48]

(b) *Parental reports of child behaviour.* These differ from the interview technique in that the questions are formalized and scored with some degree of objectivity. Several partially validated instruments have been reported.[19, 23]

(c) *Teacher's ratings.* These, as has been pointed out by several authors (summarized in reference no. 9, p. 24), have high validity on aggressive or acted out behaviour, but are less accurate at detecting more subtle forms of maladjustment, particularly internalized neurotic conflicts and withdrawn behaviour.

(d) *Child self-rating instruments.* These attempt to probe the child's inner emotional life through formal questions about his feelings and attitudes. Several such tests are available (the California Tests of Personality, the Cattell Instruments and the Children's Minnesota multiphasic personality inventory test are examples). These instruments have been stringently criticized but they may be more useful than current evaluations would suggest, particularly when their accuracy is compared with that of other diagnostic methods.

(e) *Projective tests.* Tests such as the Rorschach or the Children's Apperception Test differ from (d) in that they are unstructured and the child is free to make any response. This admits a degree of experimental error in interpretation which makes them one of the least precise diagnostic instruments.[50]

(f) *Tests of intellectual function.* These include tests such as the Wechsler Intelligence Scale for Children and group tests of intelligence. Contribution of such tests to the diagnosis of emotional disturbance in children at the moment is limited to indications of possible psychopathology because of discrepancy between intellectual potential and academic performance, though subtest scatter may sometimes be helpful.

(g) *Peer ratings.* This seems to be a potentially very valuable diagnostic method (reference no. 9, p. 55). It is a sociometric technique in which a group of children rate each other, but unfortunately it is cumbersome and useful mostly for screening of large groups of children rather than individual diagnosis.

It can be seen from an inspection of this list that these diagnostic techniques cover several different areas of the child's psychological functioning and employ different observers. As emphasized above, the accuracy of diagnosis will be enhanced by using different methods and different observers, but the value of all of them is sharply limited without control data.

THE RELATIONSHIP BETWEEN EXISTENT PSYCHOPATHOLOGY AND ENURESIS

Where psychopathology and enuresis have actually been demonstrated to coexist in a child, their interrelationship may conceivably take one or more of several forms. The relationship may be:

(a) *Psychogenic.* Here, an independent emotional conflict or psychological stress is the direct cause of the enuresis. The exact nature of this psychophysiological mechanism is controversial,

but the two most important concepts are that it is:

(i) The non-specific result of psychological tension where the particular nature of the stress is considered to be irrelevant, and only its quantitative dimensions are important.[14, 32]

At a physiological level, the effect of the stress might be direct (or local) for example, by increasing the irritability of the bladder through the activity of the autonomic nervous system and neurohormones, increasing the sensitivity of the micturition reflex and thus reducing the effective capacity of the bladder. Alternatively, this physiological action might be more remote or indirect, operating at a higher level of organization in the central nervous system. Anxiety has been known for many years to interfere with the learning of complex patterns of behaviour (the Yerkes Dodson Law[52, 53]). Since the learning of nocturnal continence is a complex procedure for the young child, it does seem reasonable to assume that a high level of anxiety, extant at the time of toilet training, could prove inimical to its development.

(ii) The direct expression of a specific unconscious conflict solved in a manner acceptable to the patient's ego, namely the production of a somatic symptom, in this case, enuresis. In this way, it is hypothesized, a child may express his hostility to his mother or his dependency needs at the birth of a sibling. This conceptualization differs from the first in that the enuresis is much more than just a meaningless physiological by-product of tension—it is the key to the underlying psychological conflict or as Winnicott[51] has put it "There are enuresis clinics in which the avowed aim is the cure of the symptom. . . . There is nothing to be said against such clinics except that they side track the whole issue of etiology of enuresis, as a symptom which means something, as a persisting infantile relationship that has value in the economy of the child." This is the overwhelmingly most popular etiological explanation of enuresis at the moment, though needless to say popularity is a poor criterion of validity.

The concept of the unconscious conflict is difficult, but implicit in it is the idea of some etiological core which must be removed in order to eliminate the psychopathology. This is somewhat analogous to the relationship between underlying pathology (for example, an inflamed appendix) and the clinical symptomatology (for example, fever, vomiting, abdominal pain, etc.). This hypothesis predicts that if a given symptom such as enuresis is removed, for example by pharmacological techniques, without in any way influencing the underlying conflict, this latter will inevitably express itself in another form (symptom substitution), which may be less desirable than the preceding mode of expression. In terms of our medical analogy, this symptomatic treatment would be seen as tantamount to treating the pain and fever of the inflamed appendix with aspirin rather than surgically. Mowrer[35] has attacked the concept of the unconscious conflict as an illegitimate transference of a theoretical system from physical medicine to the psychological sphere by Freud, who was, of course, a physician. Furthermore, it has no empirical support (*vide infra*).

(b) *Psycho-additive.* Here, although the symptom of enuresis has fundamentally a somatic etiology such as an hereditary vesical dysfunction or a chronic renal infection, the emotional disturbance through its psychophysiological consequences is aggravating or prolonging, rather than causing the condition. The presumption here is that the somatic disability would ordinarily have delayed the attainment of nocturnal continence somewhat, but without the addition of the psychophysiological effect would not have been sufficient to prevent it altogether.

(c) *Somatopsychic.* In this case the enuresis is of somatic etiology and the observed psychopathology the result of the shame, embarrassment or punishment produced by the symptom.

(d) *Vicious circle effects.* For example, one might postulate a psychosomatic-somatopsychic sequence. Here the symptom of enuresis has been directly caused by an independent psychological conflict, but the symptom has produced its own secondary emotional disturbances so that the total picture of psychopathology has been complicated.

(e) *Coincidental.* Here there is no causality in the relationship between the enuresis and the psychopathology, the former being some kind of somatic or developmental disorder which coexists independent of the emotional state. Since both enuresis and psychopathology are common conditions, this is probably much more often the case than is popularly believed. There appears to be at times in psychiatry a frenetic effort to incorporate every symptom, psychologic or somatic, within a single procrustean frame of reference. More often than not, it may prove impossible to find meaningful links between the somatic and the psychological state.

In summary, these rather obvious though artificial categorizations have been felt to be necessary in order to emphasize the complexity of the possible relationships between psychopathology and enuresis. Extreme psychoanalytic elaborations which would seek to incorporate every interrelationship within the psychodynamic

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framework, or those of some pediatricians who would ascribe all the observed psychopathology to the somatopsychic sequence, suffer from the common fault of overgeneralization and do little justice to what is a very difficult and challenging problem in the study of enuresis (and all psychosomatic relationships).

THE QUANTITATIVE NATURE OF THE CORRELATION BETWEEN ENURESIS AND PSYCHOPATHOLOGY

In the section above, a hypothetical categorization of the nature of the possible relationships between enuresis and psychopathology, when this latter has definitely been shown to exist, has been delineated. Here, some of the evidence relative to the frequency of the coexistence of these two variables (enuresis and psychopathology) will be examined briefly.

Most of the published studies centring on this subject are so badly designed in terms of controls, faulty sampling techniques, or poor diagnostic methods that it is difficult to draw valid conclusions. Since it is manifestly impossible to attempt to consider all of the pertinent papers at this point, attention will be drawn to those which rightly or wrongly seem to have won a prominent place in the literature on enuresis.

The first widely quoted paper is that by Anderson,[1] whose conclusions were that emotional factors are by far the most important cause of enuresis. However, his subjects were almost all drawn from guidance clinics, his "normal" control group was much smaller in number and, unlike his enuretics, was drawn from the highest socioeconomic groups, thus making his conclusions, certainly the quantitative ones, extremely dubious.

Michaels and Goodman,[34] in a study of middle-class children at a summer camp, found that a history of five "neuropathic" traits was found to occur more often in combination with each other than in isolation and that enuresis in particular was more often thus associated than the others. Theirs is an interesting study in that a control group was used, and statistical computations were applied when the value of these was generally as yet unrecognized. The only methodological criticism which might be leveled at this particular study is that of a "halo" effect, by which any parent reporting symptoms is likely to report several rather than one.

A paper by Gerard[17] makes a claim that practically every essential enuretic has not only definite psychopathology but a specific dynamic constellation as well. This study suffers from the defects of: biased sampling (all her subjects come from a child guidance clinic), lack of any kind of non-enuretic controls, and questionable diagnostic procedures based largely on the intensive psychoanalysis of six children and the study of case records of a larger number. Psychodynamic formulations are generally agreed to have a high experimental error, owing to the vagaries of patient-therapist interaction[4] and the highly subjective nature of the therapist's interpretations of the patient's statements or behaviour.

One of the most satisfactory studies on psychopathology and enuresis is the comprehensive monograph by Hallgren.[20] One of the outstanding features of this study was that attention was paid to enuretics who had never been seen by a doctor, as well as to those who had come to a pediatric or child guidance clinic. For the sake of convenience we may term these two groups of enuretics "medical" (for example seen by a physician or psychiatrist) and "non-medical" (not seen by a physician). There was also a non-enuretic control group which, like the non-medical enuretic group, was formed by siblings of the propositi (medical enuretics). There are those who might argue with the diagnostic techniques, in that assessment of psychopathology in the control and non-medical enuretic groups was made largely through an interview with the mother in her own home and such a diagnostic technique obviously depends to a large extent upon the individual skill of the professional interviewer.

Hallgren used two types of classification of psychopathology, one, the behavioural (nervous) symptom categorization and, two, the more global "problem child" category. Hallgren's findings were that the medical enuretic group had a significant excess of problem children (40% frequency) compared with non-enuretic controls (15%), with the non-medical enuretics intermediate (26%). These differences between the groups are statistically significant between controls and medical enuretics, and between non-medical enuretics and medical enuretics, but not between the controls and non-medical enuretics. Hallgren had rather stringent criteria for statistical significance, and a consideration of his raw data suggests that the difference between unaffected siblings and the non-medical enuretics must have been fairly close to the usually accepted 5% level of significance. The findings of the frequency of nervous symptoms produced similar results.

Hallgren concluded that "propositi (medical enuretics) are a selected group of children with emotional disturbances" and that "there is a

direct association between enuresis, at any rate combined nocturnal and diurnal enuresis, and emotional disturbances". The reason for this second conclusion is not clear, especially if one studies the findings on the non-medical group of enuretics, who at best can be said to have exhibited only a trend towards a frequency of emotional disturbance higher than in the general population. The most probable explanation for this conclusion seems to be that in some of the analyses he included all enuretic children together. Hence, it seems not unreasonable to conclude that, when all enuretics in the population (medical and non-medical) are combined, they do contain as a group a small but significant excess of emotionally disturbed children. Enuresis and psychopathology are not so commonly associated, however, that adequate statistical demonstration of this relationship is easy.

The paper by Michaels and Goodman[34] can be subjected to a quantitative analysis even though this was not made by the authors themselves. Because theirs was a group of relatively normal children, according to the authors, and since psychopathology is by definition an abnormal condition which has been placed in most population surveys at around the 10 to 15% level (summarized in references 9 [p. 23] and 20 [p. 58]), a cut-off point at this level in their population reveals that the number of symptoms likely to indicate psychopathology would be three or more. The percentage of enuretics who had had under three symptoms was 55 or approximately 60%. Therefore, only a minority or around 40% of the enuretics might be concluded possibly to have psychopathology using this rough method. In a study undertaken by the present author[45] using a behavioural symptom check-list similar to that outlined by Glidewell, Mensh and Gildea[19] and using their cut-off point of three symptoms for optimum classification of psychopathology, it was found that only a minority of around 45% of a group of 34 enuretics had evidence of psychopathology in a sample which by nature of the referral source (medical, and from a clinic operated by a psychiatrist) would be heavily biased in favour of emotionally disturbed children. It is also interesting to note that these figures agree very well with those from Hallgren's study where medical enuretics had a frequency of 42% of problem children.

The conclusions from these studies would seem to be that the exact frequency of emotional disturbance in enuretic children is unknown but that while it is probably somewhat higher than in the general population (10 to 15%), it occurs only in a minority of enuretics, that is under 50%, even among the highly biased group of medical enuretics. For the physician seeing enuretic children, there is hence some justification for focusing attention on emotional factors, but this focusing should not be tantamount to prejudging the presence of psychopathology. It should also be pointed out that inasmuch as enuretics seen by a physician seem to be a selected group of enuretics with a higher prevalence of emotional disturbance than in those not seen by a physician, it is possible that this is also true of *all types of patients seen by the physician*. Hence, it may well be that the enuretic child is no more likely to be emotionally disturbed than any other child patient.

Psychodynamic formulations such as those of Gerard[17] will receive their greatest usefulness once the diagnosis of psychopathology has been firmly established. There is absolutely no justification for generalizing these findings to include all enuretics (or even all enuretics with psychopathology). After all, in the organization of the central nervous system, effector organs such as the bladder are points of convergence or in Sherrington's term "a final common pathway". This suggests the probability of heterogeneity of etiology, if only from physiological considerations.

The remarks by Purcell[38] writing about another "psychosomatic" condition in children seem germane here: "The most elaborate and influential psychogenic theories of asthma appear to have grown all out of proportion to existing data. They offer intricate explanations for phenomena presumed to be common, if not universal. Yet the evidence for the prevalence of these phenomena is hard to find. . . . My observation is that asthma, and perhaps certain other psychosomatic disorders, has too often been treated as a homogeneous entity."

IMPLICATION FOR TREATMENT

In a majority of enuretics, therefore, no psychopathology will be discernible. This suggests that the blanket prescription of prolonged psychiatric treatment for enuresis is both undesirable and unnecessary. There is no need to make children undergo what is often for them an unpleasant social and personal experience and for their parents a highly expensive business. This does not mean, however, that psychological treatment of any kind is contraindicated when there is no psychopathology. Encouragement, explanation, reassurance and placebos may sometimes be therapeutic though Breger[11] and we ourselves[45] have been less successful with this kind of treatment than were such workers as McGregor,[30] Friedell,[16] and Usher,[44]

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who managed to cure as many as 70% to 80% of their patients with psychological measures. In view of the psychophysiologically disrupting effect of anxiety discussed above, it is common sense to attempt to remove any unnecessary cause of tension, even in a child without actual psychopathology.

If psychological measures alone relieve the condition, it does not prove that the "cause" was in fact psychological. Our somewhat meagre understanding of the placebo effect in organic conditions does not permit any such conclusions. Further, as pointed out above, a minimal amount of emotional stress may have been the last straw which, though minor in effect, was enough in the presence of a much more important somatic dysfunction to prevent the normal spontaneous resolution of the condition.

Neither would it be correct to assume that where psychopathology does exist with the enuresis, the only treatment should be psychotherapy, since such a concept would be tantamount to homeopathy. Also, the value of psychotherapy itself as a therapeutic procedure is still problematical.[25, 26] In general, a multidimensional approach using psychological, pharmacological and physiological techniques seems most logical and is probably what is practised empirically, if unwittingly, by a large number of pediatricians.

THE PROBLEM OF SYMPTOM SUBSTITUTION

The concept of "symptom substitution" is so important in any consideration of the treatment of enuresis that it merits special attention. It is frequently raised as an argument against the use of such symptom-orientated treatments as the conditioning apparatus or bladder training.[51] As discussed in more detail above, psychodynamic explanations of enuresis see it as but one expression of an underlying conflict, and hence the removal of the symptom, in so far as it does not deal with the fundamental etiology, is predicted to result in the production of alternate symptoms which may be less desirable.

The behaviourist school of psychotherapy[15, 43] has offered extensive theoretical arguments for symptomatic treatment. For the behaviourist, the neurosis is the complex of symptoms itself, not a hypothetical underlying conflict, and therefore the correct treatment is actually symptomatic.

When the empirical evidence for the oft-quoted bogey man of symptom substitution is examined, one is heavily reliant upon studies using the conditioning treatment of enuresis. There are now on record several studies[3, 6, 8, 28, 33, 35, 39, 49] which, though varying considerably in their degree of psychological sophistication, are remarkably congruent in demonstrating that if any alteration in behaviour does occur with cure, it is almost always beneficial. This has also been my own experience in a series of 50 cases[45] where adverse behavioural reactions have been due not to the removal of the symptom of enuresis, but rather when the conditioning treatment has failed and the child becomes discouraged. Similarly, in another condition, head banging,[41] it was shown that symptomatic treatment produced unexpected improvement in other areas of behaviour.

Not only does the evidence, therefore, fail to support the hypothesis of symptom substitution, but serious theoretical objections (non-falsifiability) can also be raised against it. The behaviour of the child, like all living organisms, is continually changing as it adapts to changes in the environment. In the psychodynamic context any change in behaviour could be seen as symptom substitution, particularly where it happened to suit the theoretical preconceptions of the observer. I do not doubt, for example, that any psychoanalyst who had examined children successfully treated by the conditioning apparatus would have been able to find somewhere in the child's new repertoire of behaviour evidence of symptom substitution. The concept is, thus, so elastic as to be for all practical purposes non-falsifiable. Mowrer[35] has offered a more detailed critique of symptom substitution along somewhat similar lines.

At a clinical level, it does seem most sensible for the practitioner to use whatever treatment method he finds to have some practical efficacy in this very stubborn condition. Hypothetical objections (symptom substitution) or, conversely, attractiveness of theoretical rationale (Muellner's "physiological" bladder-training technique[36]) are not really valid criteria by which to evaluate treatment methods. Readers are referred to other articles by the author[45-47] for more adequate discussions of treatment.

PREVENTION OF ENURESIS

The question of prevention requires in this review a short consideration of environmental pathogenicity. However, it should be recognized, in the light of what has been said above, that in the majority of instances enuresis does not have any emotional (or pathological!) origins. As in other areas of the literature on enuresis, much has been written but little light has been shed, owing to almost universally poor quality and abstruse theoretical formulations. It should

be pointed out that environmental studies are methodologically notoriously difficult, part of the problem being caused no doubt by the complex interaction of a wide variety of variables and the problem of conceptualizing them in a simple yet meaningful fashion.

Opinions about the pathogenicity of the environment in enuresis seem to range all the way from those of the psychoanalysts[17, 51] who see enuresis as purely reactive, to those of the "maturationists"[5, 24, 29] who, while perhaps not entirely denying the importance of environmental variables, consider the intrinsic biological mechanisms of the child of such importance as to render environmental factors relatively inconsequential.

One prevalent concept of environmental variables has been that of toilet training, but only a few studies on this subject can withstand critical analysis. McGraw's[29] often quoted study on two sets of twins which emphasizes maturation is hardly an adequate size sample and its implications for enuresis are limited by its concentration upon diurnal continence and by the premature cessation of the study. There is probably some relationship between diurnal continence, the development of nocturnal continence, and enuresis, though this has not yet been fully elucidated. In an unpublished pilot study by the author on the attainment of nocturnal continence in twins (in co-operation with the Department of Medical Genetics of the Montreal Children's Hospital) no differences in concordance between homozygous and heterozygous twins such as would have been postulated from McGraw's study were found. Interestingly, however, where propositi were enuretic (that is, had continued to wet after the age of 3 years) it did appear that concordance might be related to zygosity, though the numbers were inadequate for any further analyses.

Klackenberg's paper,[24] which failed to demonstrate any connection between age at which toilet training was begun and the development of nocturnal continence, can be challenged on his conceptualization of the environmental variables. For example, Dimson[12] in a good study was able to show that enuretic children differed significantly from a control group not by virtue of the age at which toilet training was commenced or the severity with which it was administered, but rather in the amount of resistance the children had put up to the process. This suggests that the fundamental variable lies in the qualitative stimulus value of the toilet training situation to the individual child rather than to the adult observer. This is much as suggested theoretically by Dollard and Miller.[13]

Further, enuresis is a minority condition (Klackenberg's figure for the age of 3 in his sample is 13%) and it may hence be necessary to use large-sized samples to make pathogenic variables achieve statistical significance.

Blomfield and Douglas,[7] in an epidemiological study, were able to show a prevalence of enuresis which varied with socioeconomic class, being lowest both among children of the economically more successful groups and, somewhat paradoxically, the children of agricultural workers.

Bakwin[2] has explained this as being related to the availability of toilet facilities and the differing emphasis upon toilet training. There is a further interpretation of these findings which need not discredit but rather complements the explanation by Bakwin. The prevalence appears to be least among groups low on what might be termed "social anxiety" and highest among those where there is a threat of economic hardship or a struggle for social recognition. A crucial pathogenic variable, therefore, could be the level of anxiety in the family, transmitted to the individual child.

Hallgren[20] was able to demonstrate a relationship between parental psychopathology, mother-child separation and enuresis. Precipitation of enuresis in children who had previously been dry was found by him to be correlated with the familiar variable of birth of a sibling and separation from parents. All of these situations would seem likely to cause anxiety in a child.

Stein and Susser[40] further confirmed the importance of an unstable family background and separation from natural parents as an antecedent of enuresis.

Paulett and Tuckman,[37] in a useful paper from general practice, have drawn attention to the correlation of reappearance of enuresis with maternal anxiety about another pregnancy, since it tended to recur six months after the birth of a sibling rather than at the time of the birth itself.

In my own series of 58 cases of *onset enuresis* (reappearance after a period of continence), the overwhelmingly commonest cause could be seen to be environmental variables likely to provoke a high level of anxiety in the child, such as hospitalization, separation from the mother, emotionally traumatic incidents, etc.

The most reasonable interpretation of the literature to this point, therefore, is that while we know little about those factors likely to produce nocturnal continence (it may be, as Muellner[36] has suggested, that the child requires to learn this at his own speed and in his own time without outside interference), some of the

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potentially pathogenic factors preventing acquisition or disrupting nocturnal continence are known. They can be reduced to two broad groups: first, *physical conditions interfering directly with the somatic substrate,* such as infections of the genitourinary tract. These form a small but important group of causes. And second, as would be inferred from both the Yerkes Dodson Law *(vide supra)* and knowledge of psychophysiological effects of the bladders, *conditions which cause a high level of anxiety* in a child at the critical stage of learning continence (1 to 5 years of age).[31]

The implications for prevention to be drawn from all these findings are fairly obvious and appertain to the wider field of preventive psychiatry in general. It seems logical to assume that the shorter the period that the child has been dry, the more likely he is to develop enuresis if he is subject to some kind of traumatic experience. Furthermore, extrapolating some of the findings of ethology on imprinting, it may well be that there is a limited critical period during which learning of nocturnal continence is relatively easy.[31] For example, in the present author's experience, the original pathogenic condition may long have faded into the past and the child be currently perfectly normal without any psychopathology, and yet his enuresis persists. During this critical period (say from the age of 1 to 5) all efforts should be made to avoid traumatizing a child, particularly through hospitalization or unnecessary separation from the mother (not only to prevent enuresis!).

An example of such an unnecessary trauma is found in one of the author's own cases. A 7-year-old boy who had hitherto been the only child in the family was sent away to summer camp, being separated from his mother for the first time in his life while she went into the hospital to have another baby. He remained in the summer camp for approximately two months, surely an eternity in the life of such a child. It would have been better in this case for the child to remain at home and to have been separated from the mother as short a time as possible, instead of which he was forced to contend with three major pathogenic variables, namely, losing his pride of place in the family, losing contact with his familiar environment and being separated from his parents.

A minimal amount of intermittent anxiety in children is both unavoidable and perhaps even desirable, since certain animal experiments[49] suggest it may engender psychologic resilience. However, any anxiety which is excessive in amount and duration should be presumed in our present state of ignorance to be potentially pathogenic.

CONCLUSION

In this paper the evidence for a positive correlation between psychopathology and enuresis and the quantitative nature of this correlation have been examined. In the light of all the evidence, the most reasonable position to assume seems to be that enuresis is not an etiologically homogeneous condition and facile overgeneralizations are to be deplored. In fact, in the overwhelming majority of instances the etiology is unknown and unascertainable.

Because of its complex etiology, enuresis presents a challenge to the physician's ability to diagnose not only pathology but also psychopathology. Where psychopathology is found to be present, he will have the further challenge of determining its relationship to the somatic symptom recognizing the possible complexities of this relationship, and where relevant, its relationship to a pathogenic environment. *Since in most cases enuresis will prove to be unaccompanied by either demonstrable pathology or psychopathology and to be highly resistant to treatment,* it represents an exercise of the highest order in the practice of good medicine. Physicians should be secure enough to be able to tolerate both etiologic ignorance and therapeutic impotence without falling into the traps of overinvestigation, overtreatment, aggression against parents, postures of extreme somaticism or extreme psychologism, or the prescription of highly impossible, impracticable therapeutic regimens (for example no fluids after 4 p.m., child to be taken to the toilet every two hours during the night) which, because of inevitable parental omission, relieve him of further responsibility for the care of the case.

Summary The literature on the role of emotional factors in the etiology of enuresis in children is reviewed, and it is concluded that in the majority of instances neither emotional nor physical disorder (apart from enuresis) is present. In that minority of enuretic children where an emotional disorder is also present, it can bear one or more of several possible relationships to the enuresis, only one of which is causal and a much neglected one, coincidental.

The possible psychophysiological mechanisms (both peripheral and central) of the causal relationship are examined, and the principal sources of psychogenic factors in the socio-familial environment indicated. Treatment is discussed, and it is concluded that a limited multidimensional symptomatic approach is preferable for most children.

Résumé Nous avons passé en revue la littérature relative au rôle des facteurs émotionnels dans l'étiologie de l'énurésie chez l'enfant. Nous en avons conclu que, dans la majorité des cas, ni un trouble émotionnel, ni un trouble somatique (en dehors de l'énurésie proprement dite) n'est présent dans ces cas. Chez une petite minorité d'enfants souffrant d'énurésie, un facteur émotionnel peut coexister et, dans ce cas, il peut avoir avec l'énurésie une relation ou plusieurs relations possibles, l'une d'elles seulement étant étiologique et l'autre, fort souvent négligée, relève plutôt d'une coïncidence.

L'auteur étudie les mécanismes psychophysiologiques possibles (tant les facteurs périphériques que les éléments d'origine central) de la relation causale et souligne les principales sources de facteurs psychogéniques pouvant naître dans le milieu social et familial. Il expose le traitement et il conclut en disant que, dans la majorité des cas, il est préférable d'adopter une voie d'accès symptomatique, limitée, mais polyvalente.

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